



IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: M. Allen NORTHROP *et al.*)
)
Application No. 08/482,933) Group Art Unit: 1631
)
Filed: June 7, 1995) Examiner: A.H. Marschel
)
For: MICROFABRICATED REACTOR, PROCESS)
FOR MANUFACTURING THE REACTOR,)
AND METHOD OF AMPLIFICATION)
(As Amended))

MAIL STOP AF

Commissioner for Patents
U.S. Patent and Trademark Office
2011 South Clark Place
Customer Window
Crystal Plaza Two, Lobby, Room 1B03
Arlington, VA 22202

Sir:

SUBMISSION OF FORMAL DRAWINGS

Filed herewith are eight (08) sheets of formal patent drawings of FIGS. 1-7 in accordance with the requirements of the Notice of Draftsperson's Patent Drawing Review (attachment to PTO Paper No. 8). It is requested that these drawings be approved and made part of the official record in the above-identified patent application.

EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a **CONSTRUCTIVE PETITION FOR EXTENSION OF TIME** in accordance with 37 C.F.R. § 1.136(a)(3).

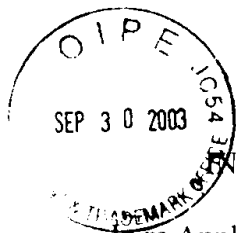
Respectfully submitted,
MORGAN, LEWIS & BOCKIUS LLP

Enrique D. Longton

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Reg. No. 47,304

Date: **September 30, 2003**
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AF/131/4D

PATENT
ATTORNEY DOCKET NO. 056297-5018-01

THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of: M. Allen NORTHROP *et al.*

Application No. 08/482,933

Filed: June 7, 1995

For: MICROFABRICATED REACTOR, PROCESS
FOR MANUFACTURING THE REACTOR,
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Group Art Unit: 1631

Examiner: A.H. Marschel

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Arlington, VA 22202

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TRANSMITTAL FORM

1. Transmitted herewith is a Response to the Final Office Action mailed May 30, 2003 (Paper No. 33), the period for response to which extends through September 30, 2003 with a petition for a one month extension of time.

2. Extension of Time

The proceedings herein are for a patent application and the provisions of 37 C.F.R. § 1.136(a) apply.

- ☒ Applicant petitions for an extension of time, the fees for which are set out in 37 C.F.R. § 1.17(a), for the total number of months checked below:

Total Months Requested

☒ one month

Fee for Extension

\$ 110.00

If an additional extension of time is required, please consider this a Petition therefor.

3. Constructive Petition

- ☒ EXCEPT for issue fees payable under 37 C.F.R. § 1.18, the Commissioner is hereby authorized by this paper to charge any additional fees during the entire pendency of this application including fees due under 37 C.F.R. §§ 1.16 and 1.17 which may be required, including any required extension of time fees, or credit any overpayment to Deposit Account 50-0310. This paragraph is intended to be a CONSTRUCTIVE PETITION FOR EXTENSION OF TIME in accordance with 37 C.F.R. § 1.136(a)(3).

4. Additional Papers**Exhibits 1-3**

Declaration of White submitted under 37 CFR § 1.608(b) (executed)
copy of Declaration of Taper submitted under 37 CFR § 1.608(b) (executed)
copy of Declaration of Egan submitted under 37 CFR § 1.608(b) (executed)

Exhibits A-Q

Northrup Exhibits submitted under 37 CFR § 1.608(b)
copy of PTO Form 1449 dated 3/12/99 (considered)
copy of PTO Form 1449 dated 3/20/98 (considered)
Submission of Formal Drawings Cover Sheet w/ 8 sheets of Formal drawings

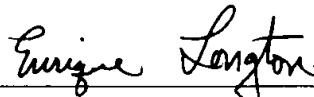
5. Fee Payment

- ☒ The Commissioner is hereby authorized to charge the amount of \$110.00 for one-month extension of time to Deposit Account No. 50-0310.
- ☒ The Commissioner is hereby authorized to charge any additional fees which may be required, including fees due under 37 C.F.R. §§ 1.16 and 1.17, or credit any overpayment to Deposit Account 50-0310.

Respectfully submitted,

MORGAN, LEWIS & BOCKIUS LLP

Date: September 30, 2003



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SUBSTITUTE FORM PTO-1449
(MODIFIED)U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICEATTY. DOKKE, JR.
07043/015002SERIAL NO.
08/482,933INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

APPLICANT:
M. ALLEN NORTHRUP, ET AL.FILING DATE
06/06/95GROUP
1634

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER							ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
AM	AA	5	1	2	9	2	6	1	07/14/92	RILEY	73	313	02/20/91
	AB												
	AC												
	AD												
	AE												
	AF												
	AG												
	AH												
	AI												
	AJ												
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FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
AM	AL	5-317030	12/03/93	JAPAN	C12M	1/00	X	
AM	AM	7-506258	07/13/95	PCT	C12M	1/00		X
AM	AN	WO 93/22058	11/11/93	PCT	B01L	7/00	X	
AM	AO	WO 94/05414	03/17/94	PCT	B01F	11/02	X	
	AP							

OTHER DOCUMENTS (including Author, Title, Date, Place of Publication)

AM	AQ	Muller et al., Microsensors, IEEE Press, 1990 [Book 472 pgs.]
	AR	
	AS	

EXAMINER Andin Marchetti DATE CONSIDERED 3-12-99

EXAMINER: Initial citation considered. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

APPLICANT: M. Allen Northrup et al.

FILING DATE: June 6, 1995

GROUP 1887

1634

(37 CFR 1.88(b))

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER							ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
PK	AA	4	2	1	9	3	3	5	8/26/80	Ebersole	23	230 B	
PK	AB	4	5	9	6	6	9	7	6/24/86	Ballato	422	98	
PK	AC	4	5	9	8	0	4	9	7/1/86	Zelinka, et al.	435	287	
PK	AD	4	6	3	2	8	0	8	12/30/86	Yamamoto, et al.	422	72	
PK	AE	4	6	7	3	6	5	7	6/16/87	Christian	436	501	
PK	AF	4	6	7	6	2	7	4	6/30/87	Brown	137	806	
PK	AG	4	6	8	3	1	9	5	7/28/87	Mullis, et al.	435	6	
PK	AH	4	6	9	2	6	5	4	9/8/87	Umemura, et al.	310	334	
PK	AI	4	7	0	8	9	3	1	11/24/87	Christian	435	7	
PK	AJ	4	7	3	7	4	6	4	4/12/88	McConnell, et al.	436	43	
PK	AK	4	7	5	9	8	2	8	7/26/88	Young, et al.	204	1 T	
PK	AL	4	9	0	8	1	1	2	3/13/90	Pace	204	299 R	
PK	AM	4	9	2	0	0	5	6	4/24/90	Dasgupta	436	50	
PK	AN	4	9	5	2	2	6	6	8/28/90	Tsuruta, et al.	156	243	
PK	AO	4	9	6	0	4	8	6	10/02/90	Perkins, et al.	156	633	
PK	AP	4	9	6	3	4	9	8	10/16/90	Hillman, et al.	436	69	
PK	AQ	5	0	0	0	8	1	7	3/19/91	Aine	156	633	
PK	AR	5	0	0	3	8	2	2	4/2/91	Joshi	73	204.2	
PK	AS	5	0	0	6	7	4	9	4/9/91	White	310	323	
PK	AT	5	1	2	9	2	6	2	7/14/92	White, et al.	73	599	
PK	AU	5	2	1	2	9	8	8	5/25/93	White, et al.	73	599	
PK	AV	5	2	2	0	1	8	9	6/15/93	Higashi, et al.	257	467	
PK	AW	5	2	2	9	2	9	7	7/20/93	Schnipelsky, et al.	436	94	
PK	AX	5	2	5	2	2	9	4	10/12/93	Kroy, et al.	422	102	
PK	AY	5	2	7	0	1	8	3	12/14/93	Corbett, et al.	435	91.2	
PK	AZ	5	2	9	6	3	7	5	3/22/94	Kricka, et al.	435	291	
PK	AAA	5	3	0	4	4	8	7	4/19/94	Wilding, et al.	435	291	

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A. M. N. N. N.

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3/30/98

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Substitute Disclosure Form (PTO-1449)

SUBSTITUTE FORM PTO-1449

U.S. DEPARTMENT OF COMMERCE
PATENT AND TRADEMARK OFFICE

ATTY. DOCKET NO. 07043/015002

SERIAL NO.: 08/482,933

(MODIFIED)

INFORMATION DISCLOSURE
STATEMENT BY APPLICANT

(Use several sheets if necessary)

APPLICANT: M. Allen Northrup et al.

FILING DATE: June 6, 1995

GROUP 180T

1634

(37 CFR 1.98(b))

U.S. PATENT DOCUMENTS

EXAMINER INITIAL		PATENT NUMBER	ISSUE DATE	PATENTEE	CLASS	SUBCLASS	FILING DATE IF APPROPRIATE
MAK	BA	5 3 8 5 7 0 9	1/31/95	Wise, et al.	422	98	
MAK	BB	5 4 2 7 9 4 6	6/27/95	Kricka et al.	435	291	
MAK	BC	5 4 8 6 3 3 5	1/23/96	Wilding, et al.	422	55	
MAK	BD	5 4 9 8 3 9 2	3/12/96	Wilding, et al.	422	68.1	
	BE						
	BF						
	BG						

FOREIGN PATENT OR PUBLISHED FOREIGN PATENT APPLICATION

		DOCUMENT NUMBER	PUBLICATION DATE	COUNTRY OR PATENT OFFICE	CLASS	SUBCLASS	TRANSLATION	
							YES	NO
AM	BH	0 347 579 A2	5/16/89	EPO	B01L	3/00		X
AM	BI	0 381 501 B1	8/6/94	EPO	C12Q	1/68		
AM	BJ	0 385 964	1/9/90	EPO	C12M	1/40		X
AM	BK	0 402 995 A2	12/19/90	EPO	B01L	7/00		
AM	BL	0 483 117 A2	4/29/92	EPO	G01N	33/48		
AM	BM	2650657	2/8/91	France	F27B	17/02		X
AM	BN	DE 38 11 052 C1	8/24/89	Germany	H04R	1/20		
AM	BO	WO 91/16966	11/14/91	PCT	B01D	57/02		
	BP							
	BQ							
	BR							

OTHER DOCUMENTS (including Author, Title, Date, Place of Publication)

AM	BS	Andle, J. et al., "Detection of Nucleic Acid Hybridization with an Acoustic Plate Mode Microsensor," <i>IEEE ULTRASONICS SYMPOSIUM</i> , Vol. 1, Honolulu, Hawaii, December 4-7, 1990, pp. 291-294.
AM	BT	Angell, James B., et al., "Silicon Micromechanical Devices," <i>Scientific American</i> , (April 1983) Vol. 248, No. 4, pp. 44-55
AM	BU	Backman, Keith, "Ligase Chain Reaction: Diagnostic Technology for the 1990s and Beyond," <i>Clinical Chemistry</i> , (1992) Vol. 38, No. 3, pp. 457-458.

EXAMINER	<i>John M. Maher</i>	DATE CONSIDERED	3/30/98
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INFORMATION DISCLOSURE
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APPLICANT: M. Allen Northrup et al.

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Use several sheets if necessary.

FILING DATE: June 6, 1995

GROUP 1801

1634

COPY

OTHER DOCUMENTS (including Author, Title, Date, Place of Publication)

AM	CA	Erlich, Henry A., ed., "PCR Technology, Principles and Applications for DNA Amplification," <i>PCR Technology</i> M Stockton Press, (1989) pp. 32-38.
AM	CB	Esashi, Masayoshi, et al., "Integrated Flow Control Systems Fabricated on a Silicon Wafer," <i>Proceedings. Electrochemical Society Conference. III</i> (18-23 Oct. 1987) Electrochemical Society, Pennington, N.J. pp. 31-388.
AM	CC	Fromberz, Peter, et al., "Core-coat conductor of lipid bilayer and micromachined silicon," <i>Biochemica et Biophysica Acta</i> (1991) Vol. 1062, pp. 103-107.
AM	CD	Gibbs, Richard A., "DNA Amplification by the Polymerase Chain Reaction," <i>Analytical Chemistry</i> , (July 1, 1990) Vol. 62, No. 13, pp. 1202-1214.
AM	CE	Heller, M. J., et al., "An Efficient Method for Extraction of DNA from Formalin-Fixed, Paraffin-Embedded Tissue by Sonication," <i>BioTechniques</i> , (1991) Research Report, Vol. 11, No. 3, pp. 372-374 and 476-377.
AM	CF	Higuchi, Russel, et al., "Simultaneous Amplification and Detection of Specific DNA Sequences," <i>Biotechnology</i> , (April 1992), Vol. 10, pp. 413-417.
AM	CG	Hoopman, Timothy L., "Microchanneled Structures," <i>Microstructures. Sensors and Actuators</i> , (1990) Cho, et al. Eds. The American Society of Mechanical Engineers (4 pages)
AM	CH	Howe, Roger T., et al., "Resonant-Microbridge Vapor Sensor," <i>IEEE Transactions on Electron Devices</i> , (April 1986) Vol. ED-33, No. 4, pp. 499-506
AM	CI	Howe, R.T., et al., "Silicon Micromechanics: sensors and actuators on a chip," <i>IEEE Spectrum</i> , July 1990, pp. 29-35.
AM	CJ	Kawasaki, Ernest S., "Sample Preparation from Blood, Cells, and Other Fluids," <i>PCR Protocols. A Guide to Methods and Applications</i> , (1990) Innis, Michael A., et al., ed., Academic Press, Inc., Chapter 18, pgs. 146-149
AM	CK	Kricka, et al., "Liquid Transport in Micron and Submicron Channels," <i>SPIE</i> , 1167:159-168 (1989).
AM	CL	Mandenius, Carl Fredrik, et al., "The Interaction of Proteins and Cells with Affinity Ligands Covalently Coupled to Silicon Surfaces as Monitored by Ellipsometry," <i>Analytical Biochemistry</i> , (1984) Vol. 137, pp. 106-114.
AM	CM	Manz, A., et al., "Micromachining of monocrystalline silicon and glass for chemical analysis systems," <i>Trends in Analytical Chemistry</i> , (1991) Vol. 10, No. 5, pp. 144-149.
AM	CN	Masuda, Senichi, et al., "Novel Method of Cell Fusion in Field Constriction Area in Fluid Integrated Circuit," <i>Proceedings IEEE/IAS Meeting</i> , (1987) pp. 1549-1553.
AM	CO	Oste, Christian, "Polymerase Chain Reaction," <i>BioTechniques</i> , (1988) Vol. 6, pp. 162-167
AM	CP	Parce, J. Wallace, et al., "Detection of Cell-Affecting Agents with a Silicon Biosensor," <i>Science</i> , (Oct. 13, 1989) Vol. 24, pp. 243-247
AM	CQ	Pfahler, P., et al., "Liquid Transport in Micron and Submicron Channels," <i>Sensors & Actuators</i> , (1990) pp. 431-434.
	CR	

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Adrian Marsh

DATE CONSIDERED

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APPLICANT: M. Allen Northrup et al.

FILING DATE: June 6, 1995

GROUP 1801

1634

OTHER DOCUMENTS (including Author, Title, Date, Place of Publication)

AM	DA	Sato, Kazuo, et al. "Individual and Mass Operation of Biological Cells using Micromechanical Silicon Devices," <i>Sensors and Actuators</i> , (1990) A21-A23:948-953
AM	DB	Senturia, Stephen D., et al., Section 2.5: Microprocessor Packaging, (Paper presented at the 14th Automotive Materials Conference, Ann Arbor, MI, U.S.A. November 19, 1986, pp. 185-191.) Reprinted with permission from <i>Sensors and Actuators</i> , Vol. 15, pp. 221-234, November 1988.
AM	DC	Shoji, Shuichi, et al. "Prototype Miniature Blood Gas Analyser Fabricated on a Silicon Wafer," <i>Sensors and Actuators</i> (1988), Vol. 15 pp. 101-107
AM	DD	Sundaram, Mani, et al., "New Quantum Structures," <i>Science</i> , November 29, 1991, Vol. 254, pp. 1326-1335.
AM	DE	Van Lintel, H.T.G., et al., "A Piezoelectric Micropump Based on Micromachining of Silicon," <i>Sensors and Actuators</i> , 15 (1988) pp. 153-167
AM	DF	Vossen, John L., et al. "Thin Film Processes," Copyright 1978 Academic Press, Inc., Chapter I-1, pg. 5 and Chapter III-2, pg. 309.
AM	DG	Washizu, Masao, et al., "Handling of Biological Cells Using Fluid Integrated Circuit," <i>Proceedings IEEE/IAS Meeting</i> , (1988) pp. 1735-1740.
AM	DH	Wenzel, Stuart T., et al., "A Multisensor Employing an Ultrasonic Lamb-Wave Oscillator," <i>IEEE Transactions on Electron Devices</i> , June 1988, Vol. 35, No. 6, pp. 735-743.
	DI	White, R., U.S. Patent Application No. 07/162,193, filed February 29, 1988, now abandoned.
	DJ	Whitesides, George M., "Molecular Self-Assembly and Nanotechnology: A Chemical Strategy for the Synthesis of Nanostructures," <i>Science</i>, Vol. 254, pp. 1312-1319.
AM	DK	Wise, K.D., et al., "Microfabrication Techniques for Integrated Sensors and Microsystems," <i>Science</i> , (Nov. 29, 1991) Vol. 254, pp. 1335-1342.
AM	DL	Wittwer, Carl T., et al., "Minimizing the Time Required for DNA Amplification by Efficient Heat Transfer to Small Samples," <i>Analytical Biochemistry</i> , (1990) Vol. 186, pp. 328-331.
	DM	
	DN	
	DO	
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	DR	

EXAMINER

Adam M. Mahay

DATE CONSIDERED

3/30/98

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